

REMARKS/ARGUMENTS

The present amendment is submitted in response to the Office Action dated December 9, 2008, which set a three-month period for response. Filed herewith is a Request for a One-month Extension of Time, making this amendment due by April 9, 2009.

Claims 17-20 and 22-32 are pending in the application.

In the Office Action, claims 17-20, 22 and 28-32 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Claims 17, 22, 28 and 29 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,005,777 to Fernandez in view of U.S. Patent No. 4,217,788 to Burr et al. Claims 18-20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez in view of U.S. Patent No. 4,546,933 to Kanada et al. Claims 30-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez in view of Burr and Kanada and further in view of U.S. Patent No. 4,652,781 to Andrei-Alexandru et al.

Turning first to the continued rejection of claim 17 for lack of enablement, in the "Response to Arguments" on page 6 of the Office Action, the Examiner maintains that the original disclosure supports a recitation in claim 4 that the spiral toothing is "mounted on" the carrier shaft, so that as a result, no fixed connection between the spiral toothing and the carrier shaft could exist. The Applicants note that the original German disclosure on which the present application is based disclosed that the spiral toothing is formed on a carrier shaft, which is to be understood that the spiral toothing is a component of the carrier shaft. Thus, the spiral toothing is either

formed as one-piece on the profile of the carrier shaft or can be fixedly connected to the carrier shaft as a separate component, for example in a press fit manner.

The original translation of the above feature was presented as "connected to", which, the Applicants submit, also is interpreted differently than merely "mounted on".

Regarding the Examiner's comments on the different crosshatching of the spiral toothing 19 and the carrier shaft 18 in Fig. 4, this crosshatching provides no indication whether the spiral toothing is displaceable on the carrier shaft or is fixedly connected to it. In Fig. 5, the same crosshatching is used. As noted above, the carrier shaft and the spiral toothing can be separate components, which can be connected to one another to form a single component by a press fitting, whereby the spiral toothing is arranged non-displaceably on the component.

A further consideration is that in the entire disclosure of the present application, no suggestion is provided that the spiral toothing should be disposed moveably on the carrier shaft, because then other features would have to be disclosed relating to fixed placement of the spiral toothing or controlling its movement.

Thus, a non-self-locking spiral toothing, as is provided in the present invention, would make no sense technically with a moveable arrangement of the spiral toothing on the carrier shaft.

The reference to Fernandez specifically provides that the spiral toothing is formed as a self-locking spiral toothing. In contrast, Burr describes a non-self-locking spiral toothing, which however is associated with a separate friction brake.

The Applicants respectfully submit that the practioner would not be led to the idea of moveably disposing the spiral toothing within the framework of the present invention. Specifically, in such a case, the technical teachings of the invention could not be combined in any sensible manner with an increase of the support force with a reverse rotation of the spiral toothing.

The Examiner maintains further that for the case in which the spiral toothing were to be fixedly disposed on the carrier shaft, an axial displacement of the carrier shaft along with the spiral toothing would appear to produce undesirable movement of the crown gear 17 also mounted on the carrier shaft. Again, this argument is not understood, because the present application provides absolutely no disclosure or suggestion that the carrier shaft 28 should be arranged displaceably. Of course, the carrier shaft 18 is – and must be– non-displaceably disposed apart from the manufacturing tolerances, so that a corresponding force transfer from the crown gear 17 to the outer toothing 20 of the belt shaft 12 is possible. This technical teaching of the present invention relates to the principle that the carrier shaft 18 and the spiral toothing 19 both are disposed non-displaceably so that a fixed connection to the drive shaft 34 via the crown gear 17 on the one hand and to the outer toothing 20 of the belt shaft 12 on the other hand are provided.

The Examiner then repeats his conclusion that the displaceability of the spiral toothing 19 on the carrier shaft 17 must move relative to support 23 in Fig. 4 to accomplish the disclosed variation in force against spacer disk 25. Again, this interpretation of the subject matter of the present application indicates a misunderstanding of the function of the spiral toothing in the present invention. One can consider perhaps for purposes of illustration a screw or spiral conveyor for

transporting bulk goods from one end of a transport shaft equipped with a spiral toothing to another end of this transport shaft. The bulk goods are taken up by the transport shaft and moved forward along the transport shaft until they reach the first gear of the spiral toothing on its end. At this point, the bulk goods are thrown in an axial direction by rotation of the first gear of the spiral toothing, such that the first gear of this spiral toothing in its rotation also always has an axial component. Thus, when this first gear of the spiral toothing comes into contact against a surface, then the first gear of the spiral toothing works with its rotation against this surface, so that a corresponding support force is used as a reaction force.

This operation sequence is described in the present application on page 12, last paragraph, through page 13, first paragraph. The present invention, then, does not intend a "variation in force" (as stated in the Office Action on page 7, line 3), but only the case whether a support force occurs or not. If the carrier shaft 18 rotates in the drive direction, then the operation or course of the spiral toothing is directed away from the crown gear 17 and the spacer disk 25. If the rotational direction of the belt shaft 12 reverses (arrow 42), with the counter rotation of the spiral toothing, now its first gear runs against the spacer disk 25, whereby the frictionally increased support force is formed. In this regard, a "variation in force" is mentioned only with regard to different rotational directions of the carrier shaft 18 with the spiral toothing 19, not to a change of the force during an unchanged rotational direction of the spiral toothing. Again, the function of the present invention, in particular of the spiral toothing, appears to have been misunderstood or misconstrued in the analysis presented in the Office Action.

Perhaps the above conclusions by the Examiner are based on the specification on pages 12-13, which describe that at the conclusion of a pretensioning act upon the belt shaft 12, in the belt withdrawal direction (arrow 42) the axial force (arrow 40) that is applied by the belt shaft 12 onto the spiral toothing 19, and hence onto the carrier shaft 18, is converted into a friction-increasing support force. Stated more precisely, the noted axial force 40 is an axial component of the rotational force exerted on the spiral toothing. If a change in rotational direction of the belt shaft 12 (rotation in belt withdrawal direction – arrow 42) takes place in connection with the tensioning motion, then the spiral toothing 19 will rotate in the same direction. Because, however, the first gear as described above lies against the spacer disk 25, an axial component of the rotational force is formed, which counteracts the supporting force as a reaction force.

To clarify, then, the Applicants would like to emphasize the following points:

- 1) the spiral toothing 19 is disposed fixedly, that is, non-displaceably, on the carrier shaft 18;
- 2) during reverse rotation of the carrier shaft with the spiral toothing 19, based on the contact of the first gear of the spiral toothing on a friction-increasing component, for example on the spacer disk 25, a friction-increasing support force occurs.

The newly cited reference to Burr discloses on the one hand that a non-self-locking spiral toothing fixedly connected with the carrier shaft is known in the state of the art. Burr, however, also discloses that in such a case a brake must be provided in order to prevent a reverse rotation of the shaft. Burr provides a separate friction brake 32 for this purpose.

In comparing Burr with the present application, then, it is apparent that with the present invention, the separate friction brake 32 is replaced by the cooperation of the first gear of the spiral toothing with the friction-increasing component, for example the spacer disk 25. The practitioner would not be led to this feature of the present invention from the teachings of Burr, which teaches a completely different structure and concept. While Burr poses a similar problem, he resolves the problem with a completely different solution via the separate friction brake.

The Applicants further submit that the practitioner would not be motivated to combine Burr with Fernandez and that such a combination still would not lead the practitioner to the present invention. Further, the proposed combination makes no sense technically. Fernandez specifically discloses as a primary aspect the axial displaceability of the spiral toothing, because with the possible relative motion of the spiral toothing on the shaft further components in Fernandez are controlled. In contrast, Burr is concerned with preventing a reverse rotation of the carrier shaft. In this connection, both references differ markedly in their function as well as in the technical objects that they address, so that a combination of these references is impossible on technical grounds and would not be considered by one of skill in the art.

Based on the reasons set forth above, the Applicants respectfully submit that claim 1 as previously amended is not rendered obvious by the cited references, whether viewed alone or in the proposed combination. It is respectfully submitted that since the prior art does not suggest the desirability of the claimed invention, such art cannot establish a prima facie case of obviousness as clearly set forth in MPEP section 2143.01. Please note also that the modification proposed by the

Examiner would change the principle of operation of the prior art, so that also for this reason the references are not sufficient to render the claims prima facie obvious (see the last paragraph of the aforementioned MPEP section 2143.01).

Withdrawal of the rejections and allowance of the claims is therefore respectfully requested.

The application in its amended state is believed to be in condition for allowance. Action to this end is courteously solicited. However, should the Examiner have any comments or suggestions, or wish to discuss the merits of the application, the undersigned would very much welcome a telephone call in order to expedite placement of the application into condition for allowance.

Respectfully submitted,



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